



**Answer all questions**

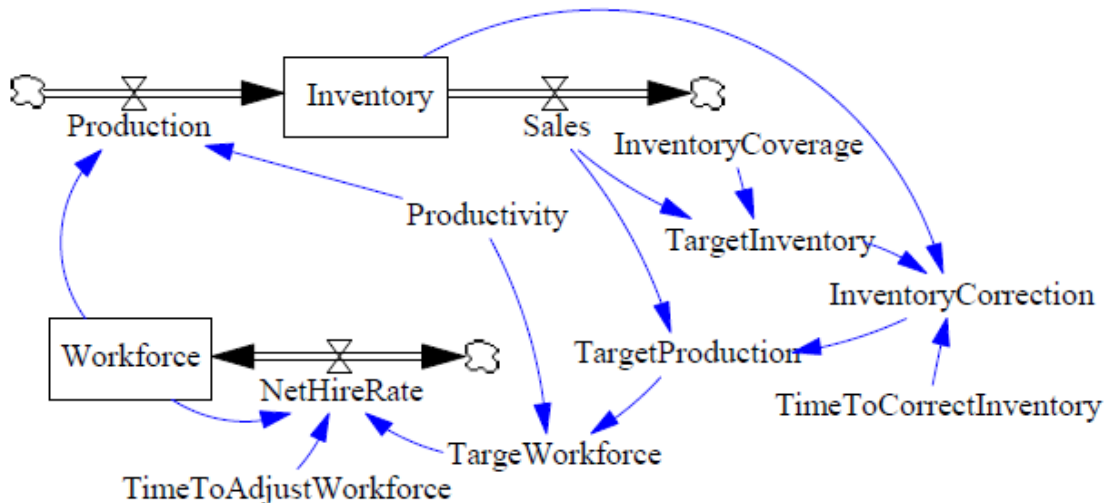
**Question one**

1- Define the following terms:

- Endogenous System
- Exogenous System
- Closed System
- Open System

2- Differentiate between the following:

- Continuous System and Discrete Systems
- Stochastic model and Deterministic model
- Static model and Dynamic model



3- For the above model

- What are the stocks, flows, constants and auxiliary variables
- Draw the causal loop diagram
- Give three feedback loops in the model

**Question Two**

1- Build a simple model of a system with 1st or 2nd order positive and/or negative feedback loop (e.g. population system, bank account system, production-inventory control (Try with only one system))

2- Give four pattern of behavior for Systems?

3- Explain the required Characteristics for modeling Queuing Systems

4- Explain the element for the following notation, (M / M / 1 / ∞ / ∞)